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ABSTRACT

A study was undertaken at Willmar Community College (WCC), in Minnesota, to assess the effectiveness of the developmental writing program and to identify which demographic and educational characteristics predicted final grades in college-level English courses. The study sample included all students who enrolled at WCC during the 1992-93 academic year and completed the Academic Skills Assessment Program tests. Grades in college-level English composition through spring 1994 were compared for students who had completed a developmental writing course and those who had not, while a linear regression was used to determine the relationship of age, years out of school, years of high school English and math completed, grade in students' last English and math courses, high school grade point average (GPA), and students' perceptions of the importance of their college to others and to themselves. The study found that completers had a median GPA of 2.0 in the English course, compared to 1.0 for non-completers. In addition, as of spring 1994 completers had a higher median ratio of credits completed (.85 versus .44) and a higher overall GPA (2.28 versus .9) than non-completers. Finally the variables of student age, years out of school, grade in last English course, high school GPA, and highest math class completed were found to be predictors of grades in college-level English composition. Contains 23 references. (BCY)

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Assessing the Effectiveness of a Community College Developmental English Course and Examining Variables Related.

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ASSESSING THE EFFECTIVENESS OF A COMMUNITY COLLEGE DEVELOPMENTAL ENGLISH COURSE AND EXAMINING VARIABLES RELATED TO COURSE SUCCESS

Betty J. Strehlow

The purpose of this study was to assess the effectiveness of the English (writing) developmental education program at Willmar Community College and to identify which, if any, of the variables examined are predictors of final grades in the college level English composition course.

The study cohort included all post-high school students who completed the Academic Skills Assessment Program (ASAP) testing, and who enrolled at WCC during the 1992-93 academic year. Students were tracked from the time of enrollment through Spring Quarter, 1994. Students in the study cohort were classified according to their placement, their compliance with the placement, and their success in the developmental course. The classifications were used to examine differences in student performance.

The impact of the developmental writing course was examined by comparing the performance of Developmental Completers with that of the Developmental Non-completers. The Mann-Whitney U test was used to provide a measure of statistical significance. Analysis indicated the Developmental Completers had a significantly higher median GPA (2.00) in the subsequent college level English course than the Non-completers (1.00), $U = 168.5$; $p < .01$. It was also found that the Developmental Completers had a significantly higher median ratio of total credits earned to credits attempted (.85) than the Non-completers (.44), $U = 239.5$; $p < .01$. A third finding was that the Developmental Completers had a significantly higher overall cumulative GPA (2.28) than the Non-completers (.90), $U = 118.0$; $p < .01$.

Stepwise multiple linear regression was used to determine whether a linear combination of two or more of the predictor variables were related to course success. The predictor variables examined were as follows: age, years out of school, years of high school English completed, grade in last English class, high school grade point average, highest level math class completed, grade in last math class, years since last math class, importance of your college to others, and importance of your college to you. It was found

that five variables, (age, years out of school, grade in last English class, high school GPA, and highest math class completed) were predictors of grades in college level English composition.

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Chapter 1

INTRODUCTION

Willmar Community College's mission promotes access to higher education for all high school graduates. However, for some students a discrepancy exists between their readiness for college level work and the preparation and academic proficiency expected by the college level curriculum. It is WCC's premise that 1) all students should have the opportunity to succeed and to achieve their goals within the college's educational programs; and 2) purposefully designed developmental educational experiences can prepare students for the rigor and requirements of the college level curriculum.

Current Minnesota Community College Board policy (Minnesota Community College Board Policies and Procedures, 1993) regarding developmental education is as follows:

> The Minnesota Community Colleges, in order to provide for both access and academic success, shall provide a comprehensive program of assessment, placement and developmental education.
>
> Community Colleges shall provide a program for the assessment of basic skill that includes testing in the areas of Reading, Mathematics, and English Composition. The assessment results shall be used for advising students in the selection of appropriate courses.
>
> 1

> The Community Colleges shall provide developmental education in academic skills designed to prepare students for entry into college level courses. (Section III.01.03)

Willmar Community College offers developmental courses in English, reading, and math. The developmental English program will be the focus of this study.

PROBLEM

After acceptance to Willmar Community College, but prior to enrolling in courses, each student completes the Academic Skills Assessment Program (ASAP). ASAP provides an evaluation of the student's skills in the areas of math, reading, and English (writing) with a resultant course placement recommendation in each area. WCC also collects a profile of information on each student at the time the placement examination is administered. This additional information includes demographics, educational background, and college plans.

Purpose and Hypotheses

The purpose of this study was to assess the effectiveness of the English (writing) developmental education program at Willmar Community College and to identify which, if any, of the variables are predictors of final grades in the college level English composition course. The following hypotheses will be examined:

1. Students who successfully complete recommended developmental course work in writing will have a higher Grade Point Average in subsequent college level course work in English than will students who do not successfully complete the recommended developmental course.

2. The overall ratio of credits earned to credits attempted for students who successfully complete recommended developmental course work in writing will be higher than for students who do not successfully complete the recommended developmental course.

3. The overall cumulative Grade Point Average of students who successfully complete recommended developmental course work in writing will be higher than for students who do not successfully complete the recommended developmental course.

4. There is a linear combination of two or more of the independent variables that will improve prediction of the student grade in the college level English composition course beyond that of any one of them.

Research Questions

The study design identified two primary questions:

1. Does developmental education impact subsequent academic performance?
2. Do student demographic or educational attributes relate to performance in college English courses?

Chapter 2

LITERATURE REVIEW

The demands on community colleges to serve society by qualifying underprepared students for subsequent study or employment are increasing. The expectation of these open-door institutions is that they "promote access but demand excellence, and perform both tasks with a shrinking fiscal base" (Fadale & Winter, 1985, p. 3). The American Council on Education (1993) observes that 89% of community colleges provide remedial (developmental) courses in English.

Most colleges rely on a test instrument to determine whether students should be placed into developmental or college level English courses. In a survey at Miami-Dade Community College, Florida ("Self-Study", 1984), faculty agreed that "performance in class is related to [placement] test scores" (p. 34). This same institutional self-study identified two issues, central to developmental programs, that most community colleges are attempting to address: "1) lack of definitive empirical research to determine the effectiveness of developmental instruction; and 2) success of underprepared students entering the college" (pp. 46-47).

What constitutes successful completion of developmental instruction? At Miami-Dade Community College ("Self-Study", 1984) "93% of the students sampled indicated that the developmental course in which they were presently enrolled increased their chances of future academic success" (p. 57). While this information is valuable, a criterion-referenced definition of success is necessary. One measure suggested by a committee at Miami-Dade Community College is: "Determination of success rates of students exiting from developmental into college-level courses, including immediate entry to the communication sequence (e.g., How successful are developmental students in the next level of regular coursework?)" (p. 87). Roueche, Baker, and Roueche (1985) concur with this as the primary evaluative criteria of a developmental program.

According to Bray (1984), however, the expectation of learning skills programs is increased GPA and retention. Bray goes on to state that a program model will : "1) provide information to decision makers, 2) provide a basis for improving existing programs, and 3) provide for additional success of the participants in the programs" (p. 2).

In 1982 through 1984, a two-phase study (Fadale & Winter, 1985) limited to New York State, focused on "determining appropriate evaluation . . . criteria and standards for assessing the effectiveness of developmental programs, and the level of effectiveness within these parameters" (p. 1). Both short and longer term, as well as formative and summative, evaluations were thought

to be needed. The project recommended four primary evaluation criteria--course exit criteria, individual goals, program completion, and academic eligibility. In addition, it was generally concurred that "success is best indicated by the level of performance in courses subsequent to the successful completion of the developmental program" (p. 23).

The American Association of Community Colleges (1994) recommends the following measure of success in subsequent, related coursework:

> The proportion of an identified entering student cohort assessed as deficient in one or more of the basic skills (reading, writing, and computation) who subsequently: a) successfully complete developmental work intended to remediate this deficiency, and b) within one year complete, with a grade of "C" or better, their first college-level courses requiring the use of this skill. (p. 21)

A report from Anne Arundel Community College, Arnold, Maryland (Haeuser, 1993), explores the issue of public accountability as it relates to developmental programs at community colleges. Haeuser suggests that a college evaluate its program by providing evidence of its link to the institution's mission; a specific description of the college population served by developmental programs; effectiveness/outcomes information including course completion success rates, retention rates, and success in college level courses; and cost of program per FTE (full-time equivalent). Using this model, Anne Arundel Community College is able to successfully defend its developmental program as essential, effective, and cost efficient.

The attempts to evaluate developmental English programs at community colleges have been sporadic over the past two decades and have used a variety

of criteria to measure success. Many colleges have never formally evaluated their programs. The following discussion demonstrates that, of those institutions that have reported results, the elements and findings of the studies vary.

Data at Anne Arundel Community College (Haeuser, 1993) showed that students who enrolled in developmental English courses tended to succeed in those courses at rates of 69-91%. These students went on to succeed in the first college level English course at rates only slightly lower than those of students with no developmental recommendations or course work. Students who did not complete their developmental requirements had significantly lower success rates.

A study done at Thomas Nelson Community College, Hampton, Virginia (Bragg, Dowd, Johns, Rollins, Tyler, & Wright, 1973), used grades and mean grade point average to determine the short- and long-term results of a developmental program that had been in place for 5 years. Results showed that developmental students earned lower grades than regular students in their first college level English course but went on to perform as well as regular students in the second English course. Also, "the mean GPA of post-developmental students in the two beginning credit English courses . . . was lower than the mean GPA of regular students in those same [two] courses" (p. 78).

At South Central Community College, Connecticut (Sturtz & McCarroll, 1993), the success of the English developmental program is measured by: 1) success (final grade of A, B, or C) in the English basic skills course (pre-collegiate level); 2) overall academic achievement (Quality Point Average); and 3) continued enrollment (persistence). Results from this study showed that a slightly higher percentage (4%) of students who followed the English developmental placement recommendations were successful, compared to those who did not follow the developmental placement recommendation and enrolled in college level English. Students who were successful in the recommended pre-collegiate English courses "had significantly higher QPA's [Quality Point Averages] than those who were unsuccessful in either recommended or higher level courses or who did not enroll in . . . English courses" (p. 17). Students who were successful in their recommended pre-collegiate English course had higher persistence rates than for the cohort as a whole.

In 1978, Romoser completed an assessment study of developmental education programs at state-assisted higher education institutions in Ohio. Although results varied from institution to institution, the study concluded "that while developmental education activities cannot insure student success, and they do not help everyone they are designed to help, they do provide alternatives that stimulate many students and help them achieve educational goals they have had difficulty achieving in the past" (p. 18). Likewise, a study

at Johnson County Community College, Overland Park, Kansas (Seybert & Soltz, 1992), included 292 students enrolled in developmental English and determined that "students who are able to achieve passing grades in developmental courses can also succeed in college-level coursework, probably improving their GPAs as they accumulate college-level credit" (p. 34).

A study of the Developmental Studies Program at North Harris County College, Houston, Texas (Reap and Covington, 1980), examined developmental and non-developmental students from 1973-74 through 1979-80. Findings show a higher percentage of males than females, a slightly higher median age, and a somewhat higher proportion of minority students enrolled in developmental courses than non-developmental courses. Success of developmental courses was measured by course outcomes, completion, and attrition. Data show developmental and non-developmental English courses to have similar rates on each of these variables. North Harris County College considers this evidence of a successful program.

Lake City Community College in north Florida adopted a nontraditional approach to developmental instruction that its proponents felt would best help the underprepared student to become more competent in communication skills, thus leading to increased success in regular college level English courses (Joseph, 1984). The philosophy "views the skills of reading, writing, and speaking in an interdisciplinary manner" (p. 2) with the belief that in order to learn good reading and writing skills, the student must

first be taught good listening and speaking skills. The Learning Skills Program was designed to teach all four of these skills in a unified manner with the goal of increased student persistence and lower attrition. In a study to assess the effectiveness of the program, student progress in subsequent courses was evaluated. It was found that students who participated in the program averaged a full letter grade higher in Freshman English than did students who did not enroll in the program prior to enrolling in Freshman English. In addition, the Language Skills Program claims a retention rate of 90-95% as compared to an estimated college-wide retention rate of 70%.

Likewise, at San Joaquin Delta College, Stockton, California (Cox, 1985), the first year retention rate for students enrolling in remedial coursework exceeded the college-wide rate by over 8%. Retention of these students is regarded as one measure of success of the program.

Butte College, Oroville, California (Boggs, 1984), documented several findings regarding students who completed a developmental English course. Among those, it was shown that "completion of [the] developmental writing [course] prior to enrolling in [the] freshman composition [course] has a substantial and significant impact upon student achievement and persistence" (p. 12). Students scoring significantly lower in every measure of prior English language ability and enrolling in the developmental writing course were able to persist to completion in the regular freshman

composition course at a rate comparable to those students who scored higher in ability and did not enroll in the developmental writing course.

However, the same study found that students who complete the previous developmental course received lower grades in the freshman composition course than those who do not. Interestingly, though, students who have had the previous developmental writing course "complete substantially more units while at Butte College and they achieve a significantly higher . . . grade point average" (Boggs, 1984, p. 13).

The Technical School of DeKalb Community College, Clarkston, Georgia (Johnson, 1985), conducted a study to compare the performance of Developmental Studies students with that of regular students. Letter grades of A through D were considered successful and, using this standard, the findings indicated "that the success rate of Developmental Studies students compare[d] favorably to the success rate of regular students in English courses" (p. 9). It should be noted, however, that most of the studies reviewed regarded grades of A through C as successful.

A study done by the Office of Planning and Research at William Rainey Harper College, Palatine, Illinois (Kolzow, 1986), concluded that developmental courses are effective in preparing students to do well in college level courses. Students at William Rainey Harper College with low test scores are required to take communication courses before they can enroll in English courses. Grades in the developmental communication courses

had a strong relationship to overall GPA and persistence rate, with those students with higher grades also obtaining higher overall GPA's and persisting longer at Harper. Also, these students were much more likely to take, and do well in, freshman English after having successfully completed the developmental communication course.

First-time freshmen at Shelby State Community College (Hobbs, 1989) are required to have their writing skills assessed by the Academic Assessment and Placement Program (AAPP), developed by Educational Testing Service. Measures used to gauge student progress included GPA and grades earned in developmental courses. The study found that 88% of the developmental writing course completers went on to successfully complete (grade "C" or higher) freshman composition with an average GPA of 2.52. The one year retention rate for developmental studies completers was 82%.

Included in this same End of Year Status Report, the Developmental Services Program at Shelby State Community College established the following Assumptions and Goals/Objectives for developmental writing students:

> Assumptions
> 1. Many [developmental] writing students may tend to avoid directly dealing with writing skills deficiencies rather than actively seeking to remedy them.
> 2. The majority of [developmental] writing students entering the course late have had little practice in taking responsibility for learning in general and specifically with writing.

3. Students tend to view their instructors as dispensers of grades rather than as resource persons who can help them with their writing.
4. Students who have been given adequate preparation and instruction will be able to apply the skills they have learned from course to course.

Goals/Objectives

1. To help students deal directly with deficiencies in their writing skills rather than avoid them.
2. To help students begin to experience success with material they're responsible for learning.
3. To help students relate to instructors and teaching assistants more as "trainers/coaches" than as authority figures with the arbitrary power to reward and punish.
4. To give students the opportunity to apply what they have learned in all courses they are taking.

(Hobbs, 1989, p. 13)

A study done at a "small rural community college in the Mid-Atlantic region" (Kraska, Nadelman, Maner, & McCormick, 1990, p. 14) compared the Quality Point Averages (QPA's) of students who had tested into and completed a developmental course in English with the QPA's of students who had not completed such a course. Results showed that although "developmental students attained a slightly higher mean quality point average as compared to the nondevelopmental students" (p. 18), this difference was not statistically significant.

New River Community College, Dublin, Virginia (Lyons, 1990), tracked students who had taken developmental English courses and compared their subsequent performance in college level English to that of students who did not take developmental English courses. The resultant finding was that "students who passed developmental English courses did better in the next

non-developmental English courses than those students who had not taken the developmental English classes at NRCC" (p. 3).

Boylan (1985) reviewed evaluation reports of developmental programs from 14 colleges and universities and found that "twelve reported higher grade point averages for those participating in developmental programs than for similar students who did not participate" (p. 2). Boylan also reports information noting that "the longer a program was in existence, the more likely it was to show positive outcomes for student participants" (p. 4). After reviewing numerous studies on the effectiveness of developmental education, Boylan concludes that these programs are successful in assisting underprepared students and states that:

1. Students participating in developmental programs tend to earn higher grades than similar students who do not.
2. Students participating in developmental programs tend to be retained at higher rates than students who do not.
3. Students participating in developmental programs tend to show greater gain scores on standardized tests than students who do not. (p. 5)

As mentioned earlier, community colleges generally use scores on assessment exams to place students into developmental or college level courses. However, some colleges are beginning to experiment with using multiple measures to make placement recommendations. Although there are no Minnesota Community Colleges currently using objective multiple measures, some California Community Colleges are exploring the use of multiple measures for placement of students. Antelope Valley Community

College (Lewallen, 1994) examined the variables age, high school GPA, high school completion status, recency of formal schooling, years of high school English, grade in last English class, highest math class completed, grade in last math class, recency of last math class, units planned, and work hours planned to determine their relationship to course success.

Three of these variables were found to be statistically and practically significant and were not highly correlated with each other. These variables (grade in last English class, units planned, and recency of schooling) are used to form an adjusted writing placement score based on multiple measures. Since Antelope Valley Community College just began this practice Fall Quarter, 1994, future studies will need to be done to determine the long-term implications and value.

Chapter 3

METHODOLOGY

The data sources, cohort, student classifications, performance measures, analyses and variables are described in this section.

Data Sources

Assessment, placement, and student profile data from the ASAP session was entered into the Computerized Assessment and Placement Program (CAPP) and used in this study. Enrollment and course data was obtained from the Minnesota Community College Information System.

Cohort

All new entering freshman, and all transfer students who have not already completed college level English Composition with a C or better, are required to complete the Academic Skills Assessment Program (ASAP) prior to enrollment.

The study cohort included all post-high school students who completed the ASAP testing prior to enrollment, and who enrolled at Willmar

Community College during the 1992-93 academic year. Students were tracked from the time of enrollment through Spring Quarter, 1994.

Post-high school students are those who have graduated from or left high school. The cohort did not include students who enrolled at WCC through the Post Secondary Enrollment Options (PSEO) Program. PSEO students were excluded from the study because college policy generally does not allow high school students to enroll in developmental courses.

Student Classification

Students in the study cohort were classified according to their placement, their compliance with the placement, and their success in the developmental course. The classifications were used to examine differences in student performance in subsequent courses, and over the course of their academic careers.

Students who had completed the placement testing procedures for English were classified in one of the following two categories on the basis of their placements, course enrollment, and performance:

1. *Developmental Completers*--students placed at the developmental level who complete the course with a final grade of A, B, or C;
2. *Developmental Non-completers*---students placed at the developmental level and who receive a final course grade of D or F.

Performance Measures

Measures of academic performance included subsequent course specific and student career measures. The course specific measure used was the median GPA in the subsequent college level English course. Student career measures included the ratio of credits earned to credits attempted and cumulative GPA as of Spring 1994. These measures were calculated using student performance during the period beginning Summer Session I, 1992 through Spring, 1994.

Analyses

The impact of the developmental writing course (hypotheses 1 through 3) was examined by comparing the performance of Developmental Completers with that of the Developmental Non-completers. The Mann-Whitney U test was used to provide a measure of statistical significance.

Stepwise multiple linear regression was used to test the relationship of specified variables to course success (hypothesis 3). This method assigns a weight to each independent variable and adds their weighted values in a regression equation: $Y' = B_0 + B_1 X_1 + B_2 X_2 + \cdots + B_n X_n$, where Y' is an estimate of the value of the dependent variable, $X_1, X_2, \cdots, X_n$ are given values of the independent variables, $B_1, B_2, \cdots, B_n$ are weights, and B_0 is a constant.

Variables

The variables examined for relationship to course success were as follows: age, years out of school, years of high school English completed, grade in last English class, high school grade point average, highest level math class completed, grade in last math class, importance of your college to others, and importance of your college to you.

Chapter 4

RESULTS

Effectiveness of Developmental Courses

Hypotheses 1 through 3 test the effectiveness of the Developmental English course.

Table 1 compares the median GPA in subsequent college level English courses, the median ratio of total credits earned to credits attempted, and the median cumulative GPA for Developmental Completers and Developmental Non-completers. Since there is a large discrepancy in the size of the two groups, a random sampling was done and the Mann-Whitney U test was used to compare the two groups.

Table 1

A Comparison of Developmental Completers and Non-completers

	N	English GPA	Credits Earned/ Credits Attempted	Cum GPA
Developmental Completers	189	2.00	.85	2.28
Developmental Non-completers	42	1.00	.44	.90

Hypothesis 1 test. The null hypothesis that students who successfully complete recommended developmental course work in writing will have a similar GPA in subsequent college level English course work as that of students who do not successfully complete the recommended developmental course was rejected ($U = 168.5$; $p < .01$). Developmental Completers had a significantly higher median GPA in the subsequent college level English course than the Non-completers (2.00 vs 1.00).

Hypothesis 2 test. The null hypothesis that the ratio of total credits earned to credits attempted for students who successfully complete recommended developmental course work in writing will be similar to that of students who do not successfully complete the recommended developmental course was rejected ($U = 239.5$; $p < .01$). Developmental Completers had a significantly higher median ratio of total credits earned to credits attempted than the Non-completers (.85 vs .44).

Hypothesis 3 test. The null hypothesis that the cumulative GPA of students who successfully complete recommended developmental course work in writing will be similar to that of students who do not successfully complete the recommended developmental course was rejected ($U = 118.0$; $p < .01$). Developmental Completers had a significantly higher median cumulative GPA than the Non-completers (2.28 vs .90).

Variables Related to Course Success

The regression hypothesis 4 states: There is a linear combination of two or more of the independent variables that will improve prediction of the student grade in the college level English composition course beyond that of any one of them.

Table 2 shows how each variable is coded and the direction of its relationship to the dependent variable (D.V.). The relationship is listed as either direct or inverse. In a direct relationship, the value of the dependent variable increases as the independent variable increases. In an inverse relationship the value of the dependent variable decreases as the independent variable increases. It must be noted that the inverse relationships shown for variables in Table 2 are accounted for by the method of coding used for each (e.g., higher grades are coded with low numbers).

Table 2

Independent Variables for Hypothesis 4

Independent Variable	Relationship to D.V.	Method of Coding
Age	Direct	Number of Years
Years Out of School	Direct	1 if Still in School, 2 if Less than 1 Year, 3 if 1-2 Years, 4 if 3-4 Years, 5 if 5-10 Years, 6 if More Than 10 Years
Years of High School English Completed	Inverse	1 if Less Than 1 Year in High School, 2 if 1 Year in High School, 3 if 2 Years in High School, 4 if 3 Years in High School, 5 if 4 Years in High School
Grade in Last English Class	Inverse	1 if A, 2 if B, 3 if C, 4 if D, 5 if F
High School GPA	Inverse	1 if A-to A (3.5-4.0), 2 if B to A- (3.0-3.4), 3 if B- to B (2.5-2.9), 4 if C to B- (2.0-2.4), 5 if C- to C (1.5-1.9), 6 if D to C- (1.0-1.4), 7 if Below D (0.-0.9)
Highest Math Class Completed	Direct	1 if None, 2 if Basic Math (Arithmetic), 3 if Algebra I (Beginning), 4 if Geometry, 5 if Algebra II (Intermediate), 6 if Trigonometry, 7 if College Algebra/Pre-calculus, 8 if Calculus
Grade in Last Math Class	Inverse	1 if A, 2 if B, 3 if C, 4 if D, 5 if F

Table 2 cont.

Independent Variable	Relationship to D.V.	Method of Coding
Importance of Your College to Others	Direct	1 if Not Very Important, 2 if Somewhat Important, 3 if Very Important
Importance of Your College to You	Direct	1 if Not Very Important, 2 if Somewhat Important, 3 if Very Important

Each step of the analysis is summarized in Table 3.

Table 3

Stepwise Multiple Linear Regression on Grade in College Level English

Step	Independent Variable	Standardized Weight	Simple R	R^2	Change in R^2	P-Value of Change
1	Age	.147369	.157	.1068	.1068	.000
2	Years Out of School	.147740	.121	.1660	.0592	.000
3	Grade in Last Engl. Class	-.073652	-.253	.1711	.0051	.000
4	High School GPA	-.325022	.327	.1744	.0033	.000
5	Highest Math Class Completed	.068788	.168	.1775	.0031	.000
6	Years of High School Completed	-.031696	-.012	--	--	--
7	Grade in Last Math Class	.015627	-.194	--	--	--
8	Importance of Your College to Others	.012629	.003	--	--	--
9	Importance of Your College to You	.023991	.003	--	--	--

Note. Each variable above the double line in Table 3 was determined to be significant by the stepwise regression analysis. No p-value is given for R^2 changes beyond .1775 since there is no significant improvement in prediction.

The application of the selection criteria stated in the methodology section leads to the following regression equation (using unstandardized weights): Y' = 2.7005 + .0510 (Highest Math Class Completed) - .0376 (High School GPA) - .1014 (Grade in Last English Class) + .1126 (Years Out of School) + .0308 (Age), where:

Y' is the grade in college level English composition,

"Age" is number of years,

"Years Out of School" is 1 if still in school, 2 if less than 1 year, 3 if 1-2 years, 4 if 3-4 years, 5 if 5-10 years, 6 if more than 10 years,

"Grade in Last English Class" is 1 if A, 2 if B, 3 if C, 4 if D, and 5 if F,

"High School GPA" is 1 if A- to A (3.5-4.0), 2 if B to A- (3.0-3.4), 3 if B- to B (2.5-2.9), 4 if C to B- (2.0-2.4), 5 if C- to C (1.5-1.9), 6 if D to C- (1.0-1.4), 7 if below D (0.-.09),

"Highest Math Class Completed" is 1 if None, 2 if Basic math (arithmetic), 3 if Algebra I (beginning), 4 if Geometry, 5 if Algebra II (intermediate), 6 if Trigonometry, 7 if College Algebra/Pre-calculus, 8 if Calculus.

The multiple R for this equation was .41 which accounted for 17.8% of the variance in the dependent variable. The corresponding p-value, .000, is less than .05. Therefore, the null hypothesis is rejected.

The sign of an independent variable's weight can be interpreted as the direction of its relationship to the dependent variable. Three of the five variables in the above equation have positive weights which means that they

are directly related to the dependent variable. The other two variables have negative weights which means that both are inversely related to the dependent variable. However, the coding of these two variables, grade and GPA, must be noted (see Table 2).

The size of the weight gives the amount of change in the dependent variable for each unit change in the independent variable, when all other independent variables are held constant. The weight for highest math class completed, .0510, means that on the average the student's English composition grade went up .05 GPA points for each math class completed. The weight for high school GPA, -.3076, means that on the average the student's English composition grade rose .31 GPA points for each .5 increase in high school GPA. The weight for grade in last English class, -.1014, means that on the average the student's English composition grade rose .10 GPA points for each increase in letter grade in last English class. The weight for years out of school, .1126, means that on the average the student's English composition grade went up .11 GPA points for each designated interval of years out of school. The weight for age, .0308, means that on the average the student's English composition grade rose .03 GPA points for each year increase of age.

The standardized weights allow determination of the relative importance of each predictor variable in prediction. Higher weights show more importance than lower weights.

Chapter 5

DISCUSSION

For students whose placement recommendation is for Developmental English, those who successfully complete that course with a grade of C or better have significantly higher GPA's in the subsequent college level English composition course than do those students who complete the course unsuccessfully with a grade of D or F. Likewise, these same Developmental Completers have significantly higher ratios of total credits earned to total credits attempted and have significantly higher cumulative GPA's than do the Developmental Non-completers. These findings would suggest that the students receiving a grade of D or F in Developmental English are "at risk" and not likely to successfully complete future college course work. Identifying the reasons for their lack of success would allow the college to develop policies to aid these students.

Finally, the study identified demographic and educational background attributes as predictors of success in the college level English composition course. This information will allow Willmar Community College to explore the usage of multiple measures for placement recommendations in English.

One way of doing this is to adjust the student's raw score on the placement exam based on the existence of any of these identified attributes for a particular student. This method would be fair and consistent for all students.

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